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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,727	12/12/2001	Donald H. Keskula	8540G-000084	4633
27572	7590	09/21/2004	EXAMINER	
HARNES, DICKEY & PIERCE, P.L.C.			WILLS, MONIQUE M	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	

1746

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/021,727

Applicant(s)

KESKULA ET AL.

Examiner

Monique M Wills

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 12-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 22-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

DETAILED ACTION

*Election/Restrictions*

Applicant's election with traverse of Group I, claims 1-11 & 22-28, on July 7, 2004 has been acknowledged and placed of record on file. Accordingly, claims 12-21 have been withdrawn.

*Specification*

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification does not provide support for the "wire manometer" of claim 27.

*Claim interpretation*

There is no definition of "wire manometer" in the specification, therefore the Examiner assumes that the "wire manometer", of claim 27, is equivalent to the "wire anemometer" of claim 9.

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 10-11, 22-26 & 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Oglesby et al., U.S. Pub. 2002/0164515.

In re claim 1, Oglesby teaches an airflow control system for a fuel cell comprising: an air supplier (20) for supplying air; a volume (50) for storing said air; a plurality of fuel cell subsystems connected to said volume (12 & ¶ 0012); a sensor (32) for sensing air pressure in said volume; and a controller (30) that receives a minimum required air pressure for each of said fuel cell subsystems (¶ 0027). See Figure 1. With respect to claim 2, the controller (30) selects a highest minimum required air pressure and controls said air supplier to provide said highest minimum required pressure in said volume (¶ 0027). Regarding claim 3, the air supplier (20) includes a compressor. See Figure 1. With respect to claims 4 & 23, the volume (50) includes tubing (¶ 0014). With respect to claims 5, 6, & 24-25, the volume (50) includes a manifold leading to the compressor (20) and to the pressure regulator (24). See Figure 1. In re claims 7, 11 & 26, the controller periodically polls each of said fuel cell subsystems for said minimum required air pressure (¶s 27 & 28). As to claim 8, controller (30) controls the amount that regulators 22, 24 decrease (or increase) the pressure of gas and air that enters fuel cell (12) based upon vehicle operating data that is received from conventional vehicle operating sensors (32). See paragraph 20. This configuration

embraces applicants flow controller and flow sensor, because the rate of pressure and mass flowing through a conduit are not mutually exclusive properties. Therefore, a valve/regulator, such as (24), that regulates the pressure of air charged through a conduit, inherently controls the mass or flow rate of air through the conduit, because of the inversely proportional relationship between pressure and volume ( $P=nRT/V$ , Ideal Gas Law, see Chem Team: Gas Law-Ideal Gas Law attached from <http://dbhs.wvusd.k12.ca.us/webdocs/GasLaw/Gas-Ideal.html>). The operating sensor (32) embraces Applicant's flow sensor, because of the same inversely proportional relationship between pressure and volume, stated hereinabove. See Paragraph 20. With respect to claims 10 & 28, the fuel cell subsystem contains a plurality of fuel cells ( $\P0012$ ), a cathode inlet (52) and anode inlet (46). See Figure 1. As to claim 22, the airflow control system comprises: a compressor (20) that supplies air; a volume (50) for storing said air; a plurality of fuel cell subsystems (12 &  $\P0012$ ) connected to said volume, wherein each of said fuel cell subsystems (12) include a flow controller (30) and flow sensor (32); a sensor( $\P0021$ ) for sensing air pressure in said volume; and a controller( $\P0020$ ) that polls said flow controllers of said fuel cell subsystems for a minimum required air pressure for said fuel cell subsystems, that selects a highest minimum required air pressure, and that controls said compressor to provide said highest minimum required pressure in said volume. See Figure 1 and Paragraphs 0019-0021. Therefore, the instant claims are anticipated by Oglesby.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oglesby et al., U.S. Pub. 2002/0164515 in view of Sekine U.S. Patent 5,186,150.

Oglesby teaches a system for supplying air to a fuel cell as cited in the §102(e) rejection hereinabove, including pressure sensor (32).

Oglesby is silent to an electronic throttle valve or a hot wire anemometer.

Sekine teaches the equivalence of pressure sensors and hot wire anemometers to detect physical change brought about by motion or kinematic behavior of fluid (col. 9, lines 5-10).

Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though Oglesby does not teach a hot wire anemometer, Sekine teaches that pressure sensors and hot wire anemometers are art recognized equivalent materials for use as measuring physical change brought about by motion or kinematic behavior of fluid, and therefore one having ordinary skill in the art would have substituted one measurement device for the other.

As to the throttle valve, Sekine teaches that it is conventional to employ throttle valves in fluid communication with air flow meters (col. 15, lines 55-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to

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employ the throttle valve of Sekine, in the fuel cell system of Oglesby, in order to control the flow path surface area of air charged to the fuel cell.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kobayashi et al. U.S. Pub. 2002/0006537, teaches a gas-supplying apparatus and process in a fuel cell. Iwasaki U.S. Patent 6,497,972 teaches a fuel cell system and method for controlling operating pressure. Saloka et al., U.S. Pub. 2003/0072984 teaches a system and method for rapid preheating of an automotive fuel cell.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Michael Barr, may be reached at 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

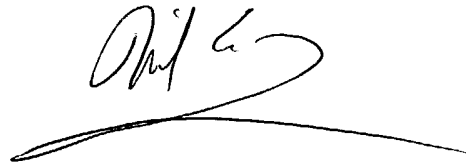
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

09/18/04

**MICHAEL BARR**  
**SUPERVISORY PATENT EXAMINER**

A handwritten signature in black ink, appearing to read "Michael Barr", with a long, sweeping horizontal line underneath it.